

Galt & Rob
AN
INQUIRY
INTO THE
NATURE, CAUSE, and CURE
OF THE
CROUP.

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EDINBURGH,
Printed for A. KINCAID and J. HELL, MDCCCLV.
[Price One Shilling.]

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I N Q U I R Y

INTO THE



NATURAL HISTORY

OF THE

C O R P O R A T I O N

BY FRANKLIN AND
JAMES H. BAKER, Esq.
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Printed for A. Kincaid and J. Bell, MDCCCLXV.

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INQUIRY

INTO THE
NATURE, CAUSE, and CURE

OF THE
CRU P.

(*angina membranacea*)

THE Science of Medicine has been, gradually, advancing for these two thousand years by past; and is now brought to a great degree of improvement; perhaps to as great a degree, every circumstance considered, as the difficulty of the art, the limitation of the human faculties, and the continual attempts to further refinement, too often conducted merely by fancy, will admit of.

ONE used to consider the progress of the different arts, their gradual advancement to perfection, and their subsequent decay, may

be

be apt to contemplate, with some alarm, the present situation of physic. More attention is paid to the classing of diseases, as if they were natural and permanent entities, than to the complete history of each particular one; more to the sub-division and splitting of them into separate species, from some slight difference in the symptoms, than to the general turn and complexion of the whole disease; more to the novelty and change of application, than to the improvement of what is already discovered and in use. These, a speculative mind will be apt to consider as proofs of too great refinement, and distant marks of a future change.

It is by a close attention to the history of particular diseases, that the science has made such great advances. The accuracy of antient and modern authors hath left few diseases untouched. By describing every circumstance belonging to them, and the appearances, which occurred, on inspecting the bodies after death, they have ascertained most diseases, and laid a foundation for arriving at as certain a knowledge of the rest,

rest, as the narrow limits of our powers will allow. For cases in medicine are the experiments of this branch of Natural Philosophy.

THERE is one disease, however, which had entirely escaped all regular examination; and concerning which, there was little to be learned by inquiry, and still less from books; I mean the CROUP. I never have seen any thing written on this subject, except a Thesis, where the author gives us no facts; and classes it amongst the spasmodic distempers, to which it has no resemblance, either in its progress or cure. The *Catarrhus suffocativus* of Etmuller, tho' it resembles the Croup in many particulars, yet appears to be a very different disease in some symptoms, in the cure, and appearances after death.

DR Ruffel, in his Oeconomy of Nature, describes, in a few lines, a disease very similar to this, in most of its symptoms: But it seems not exactly the same, as it was attended with ulcers about the larynx, and terminated often in a sphacelus of the lungs. Besides,
 70 had

had it been the same disease with our Croup, the same appearances must have occurred, upon dissection, to him as to us.

I SHALL, therefore, treat this disease as entirely unknown as to its nature, cause, effects, and cure; and try how far our facts will carry us towards a discovery of these.

How so singular and dangerous a disease has been totally neglected, while such attention has been paid to most others, is not the least surprising circumstance belonging to it. Its external features ought to have been sufficient to have roused an inquisitive searcher into diseases; its internal appearances, if but once seen, must have raised, from their singularity, the strongest desire to investigate its nature. But these seem to have been more than counterbalanced by its local situation; the unfrequency of its appearance; the subjects which it attacked, these being generally children, and unable to give a distinct account of their complaints; the rapidity of its course; the apparent easiness of its symptoms; and their similitude to other catarrhal
or

or peripneumoniac distempers. These seem to be sufficient reasons for its being so long undistinguished and undescribed, without laying us under any necessity of looking on it as a new disease. Probably it has existed more or less in all ages; for the same productive causes must have operated formerly, as they do at present.

THIS disease happens, or at least is observed, so seldom in this city, that very few cases must occur to any particular person, during the course of a whole lifetime. To have the power of seeing more, one must put himself in the way of intelligence, especially at places situated on the coast. By that means, I have had an opportunity of attending more cases, than otherwise would have fallen to the share of any one. The danger of the symptoms under such apparent ease, and the singularity of its appearances after death, in the first examination, excited my curiosity. The subsequent cases were sufficient to show me its nature, tho' perhaps not to point out a certain cure. That is not always allowed to mortals. To be able, however, to distinguish

guish it from other diseases; to discover the nature of it; to point out when it is cureable, and when not; perhaps to lay a foundation for improvement in its most desperate state; that is the design of the following pages.

To be the first author in treating a disease; to have no assistance from preceding experience, is a situation a little uncommon in these modern times. To this cause, and to the rarity of the disease, must be imputed my not bringing it to that degree of improvement, that I could wish; and that has happened in other diseases. If this can serve for a foundation to excite others to inquire, to preserve, and to communicate facts observed by them, my labour will be well bestowed,

This disease appears to belong peculiarly to children; and the younger they are, after they are weaned, the more liable they seem to it. On the breast, they appear less subject to it; nor, which is as probable, as they cannot tell their complaints, it is taken for some other disease. I never saw, or heard of one, above twelve years of age, affected by
it

it. After this the body gains a strength capable of resisting the cause, or of expelling it when received. About this time, or a little after, very great changes happen in the human frame.

It seems, likewise, in a great measure, to have a local situation; and to be very seldom found at any great distance from the sea-shore. It appears much less in *Edinburgh* than in *Leith*, or *Musselburgh*. It is often seen along the coast of *Fife*; and is very common, I am told, along the coast of *Airshire* and *Galloway*. Tho' I never heard of it in the neighbouring coast of *England*, yet probably it is to be found there too. The same causes, that kept it from being so long attended to here, may still make it neglected there. Very wet and marshy situations, sometimes, produce it.

In the first history of a disease, it becomes absolutely necessary, to set down the cases and the facts, as they really happened. In diseases, that have already been described, it is sufficient to enumerate the symptoms, as they generally appeared, by which the difference betwixt that species, and any of the

former, may be observed. But in a new disease, as little ought to be left to the fancy or judgment of the historian as possible; for, from the natural appearance of the symptoms, all our reasoning and conclusions must take their rise. As cases are analogous to the experiments of Natural Philosophy, they ought to be described as circumstantially. Hippocrates, that great historian of diseases, treats his epidemics, as they were new distempers, in this way.

CASE E. I.

MARCH 15th. Was called to Miss****, aged fifteen months, of an inflammatory constitution, and living within a quarter of a mile of the sea-shore. The day before, she had appeared duller and hotter than usual. This morning she was attacked with a difficulty of breathing. Her pulse was strong, and about 135 in a minute; five ounces of blood was immediately taken from her. After which, she was seized with the sharp stridulous voice, which I can resemble to nothing more nearly than the crowing of a cock;

cock; and which is the true diagnostic sign of this disease. She had a quick and high breathing, and unusual heat in her forehead, and palms of her hands. Her feet and hands were swelled, and had an œdematous appearance. As her pulse was still strong, five ounces of blood was again taken from her, which seemed to ease her greatly. The steams of warm water and vinegar made her spit up, and did her service. Her belly was kept constantly loose with *magnesia alba*; and that night a blister was applied round her neck. On the third day, she was a little easier; but the voice still remained shrill, the breathing high, and pulse strong. At night four leeches were applied to her throat; and the orifices, constantly fomented with warm water, continued bleeding for four hours. Next morning all the symptoms went off. In this case, the repeated bleedings, especially the local one, with internal and external fomentation, did most remarkable service. I was not so certain about the effects of the blister.

CASE

C A S E II.

Miss *****, aged eighteen months, healthful, living near a great loch, and about a mile distant from the sea, was seized, March 30th, with the Croup. She had immediately lost five ounces of blood by leeches, and had got a vomit. Next morning, she had taken a second vomit, after which I first saw her. Her voice had the characteristical shrillness, only, when she raised it, or coughed. Her breathing was quick. Pulse about 130. and rather weak. Dry, rough, short cough. She had no pain in swallowing, but showed uneasiness when she turned about her head. Urine clear, and without sediment. The steams of warm water and vinegar, and a blister round the neck, were ordered. In the evening she was better, and her lungs appeared somewhat moister. That night she rested pretty well; and on the third day her voice was natural, except when she coughed. She had a running at the nose, and there was a cloud in the urine. The vomit repeated. On the fourth day, the voice was still somewhat

what unnatural. The urine now deposited a light sediment, which lasted for three or four days, during which she gradually recovered. She had the same disease again six months after, but in a slighter manner.

C. A. S. E. III.

A CHILD two years old, who had had the small pox six weeks before, had been seized, August 8th, with the croupy voice. Leeches had been applied, and blisters behind the ears, and to the throat: On the 12th, I saw him, and found his breathing bad, great stuffing, shrill voice, and a swelling externally on the superior part of the *trachea*. Pulse 140. Every thing looked ill. Steam, external fomentation, poultices, and several leeches were applied to the throat. 13th, the child greatly relieved, more chearful, and voice more natural. 14th, pulse much better, and the peculiarity of voice and the swelling almost gone.

I NEED not relate more cases of this kind, as such like commonly occur, and as
 been they

they are sufficient to prove its nature in this situation. The only remark that I shall make is, that the symptoms of these three patients, and their cure, show plainly the Croup, in this state, to be a disease of an inflammatory nature, attacking the organs of voice and respiration, particularly the superior parts of the *trachea*, and that the local inflammation often ends by resolution. This disease appears to be confined chiefly to the *trachea*, as the patients have no pain in deglutition; as they generally complain, when they are of an age to speak, of a dull pain in the upper part of it; as sometimes an external swelling is seen there; and as the *fauces* are at most but a little redder.

LET us now see what light other situations of the disease, and inspection into the morbid body, will give us.

C A S E IV.

SEPTEMBER 29th, 1760, was called to a boy of seven years of age, who had been some days sick. He lived on *Leith* bridge, had been

been ill of the chin-cough the preceeding winter, and had recovered of the measles about six weeks before this. He had been frequently purged, and had been tolerably well, excepting a slight cough, till he was seized, four days before I saw him, with fever, heat, thirst, and the shrill croupy voice. When I saw him, his pulse was quick, with a little degree of hardness, but not strong. He swallowed easily; but complained of a pain in the *trachea*, when he spoke, or when I pressed it with my fingers. His face had been swelled. Great drought. Breathing high, but not very quick. He sometimes expectorated, and had often frothy *saliva* upon his lips. The urine had a white ouzy sediment. His senses and his head were quite clear and distinct. He was immediately blooded, and at night had leeches applied to his throat, and a blister round it. The next day his pulse was weaker, and beat 175 in a minute. Breathing quicker, and often altered. Distinct in all his senses. Died that night.

NO

On laying open the parts, there was no appearance of any inflammation on the *fauces*. But, to my great surprise, the whole superior internal surface of the *trachea* was covered with a white soft thick preternatural coat or membrane, easily separable from it, and generally lying loose upon it, and purulent matter lodged below, and around it. The subjacent parts were red; but no great degree of inflammation. As we searched downwards, the same appearances continued thro' the ramifications of the *aspera arteria*, tho' the membrane seemed here softer, thinner, and to become of a more purulent nature. All the branches of the windpipe and *bronchie* were filled with purulent matter; and we could easily squeeze it out, in great plenty, from all these pipes. The substance of the lungs was quite sound, and in a natural state.

THESE circumstances appeared, at that time, so new and surprising to me, that I looked on them as accidental, and not the natural effects of the disease. But I was soon convinced of the contrary.

CASE

C A S E V.

OCTOBER 5th. I was called to the last boy's sister, aged five years, who had been observed, only the day before, to complain of a dull pain in the throat. She had been immediately blooded, and had got a mixture of *spt. minder.* and *theriac*, with a blister to the neck. She had been in a constant sweat since she began to take the mixture. When I saw her she had the dry shrill voice, and difficult breathing, with great motion of the ribs and *scapulae*. Her face was a little swelled and red; deglutition easy. Her pulse was quick, and of a proper degree of strength. What she expectorated seemed to be of a purulent nature. Her senses were all in the natural state. Leeches were immediately applied to her neck, and afterwards a warm fomentation, and the steams of warm water and vinegar: these appeared to give her some ease. At night she seemed worse, and could not ly long in one posture. She was vomited with the *syr. scillit.* and threw up a great deal of gross ropy defluxion. I tryed her with a

C

mixture

mixture of camphire and nitre. The next day her pulse was 152, and weaker. The *amygdale* appeared a little swelled, and covered with *mucus*. She had a little difficulty of deglurition. Frequent reachings. She called often for drink, but drunk little at a time. Tongue white and furred. Breathing rather quicker to-day, and often altered. Eat some spoonfuls of panada and wine. She was ordered an emollient injection, and garlick cataplasms to her feet. In the afternoon, all the symptoms were worse. The injection had operated thrice. Breathing difficult and quicker. Great restlessness and anxiety. Pulse weaker and intermitted. She died in the evening, all her senses being distinct, and having eat somewhat just before. What she spit up appeared thin; but what came up, with the short stifled cough, was always thick and yellow, like matter.

WHEN she was opened by Mr Gibson Surgeon, we perceived the glands at the root of the tongue turgid, covered with *mucus*, and their excretories open. The *amygdale* were larger than usual; but neither they,
nor

nor the neighbouring parts, were inflamed. All about the *glottis* was covered with a tough viscid *mucus*. When the *trachea* was opened no inflammation appeared; but all its superior internal surface, particularly the back part, next the *esophagus*, was covered with a soft half-dissolved-like-membrane, detached from the subjacent parts, lying loose like the blankets of a bed that has been lain in, and matter like *pus* on each side of it, and betwixt it and the membrane of the *trachea*. Some of the small glands about the *glottis* were turgid. The farther down we searched, the more purulent matter we found; but no membrane appeared here. When we came to where the *trachea* enters the lungs, by squeezing them, we could force out thro' it a great deal of whitish glutinous liquid. The same matter appeared in all the ramifications of the lungs, and they seemed to be intirely full of it, as we could squeeze it out, mixed with a little blood, from the smallest divisions of that canal. The substance of the lungs appeared quite sound. The internal coat of the

the stomach seemed, likewise, very soft, and covered with a great quantity of *mucus*.

C A S E VI.

JANUARY 3d. I was called to a boy of seven years of age, at *Musselburgh*, who had gone about till this morning, but had complained for four days of a great difficulty in his breathing, and of a constant dull pain about the head of the *trachea*, attended with a shrill voice. As his pulse was quick, and his breathing difficult, the Surgeon had that morning taken twelve ounces of blood from him, and given him *Gum. Ammon. Sal. C. C. gr. iv.* When I saw him, at night, his pulse was very frequent and weak, his breathing quick; still a little pain about the head of the *trachea*; no inflammation to be seen in the *fauces*, and his urine deposited an ouzy sediment. His voice was feeble, and the shrillness had gone off. As I saw he would soon die, I desired the Surgeon to open him, and to be particularly attentive to every circumstance in the whole course of the *trachea*, as
some

some unusual appearances, there, had occurred to me in this disease.

HE told me, afterwards, that the lungs were not in the least inflamed; that he found, a little below the aperture of the *glottis*, a quantity of what appeared to him pure matter; but had not observed whether or not there was any membrane, nor whether the ramifications of the *trachea* were filled with the matter. This, however, must certainly have been the case, as matter was actually found in the superior parts of the *trachea*, as his lungs appeared otherwise sound, and could not be the cause of his death; and as he had the same purulent sediment in his urine, which I had observed in the former cases, and which attends all collections of matter, in whatever part of the body they are contained. To our purpose, it is sufficient, that matter of a purulent kind, was found in the *trachea*.

C A S E VII.

A BOOKBINDER's child, four years old, in this town, was seized with a cough and
quick

quick breathing, Saturday October 5th, 1763. As it appeared of the croupy kind, he was blooded with leeches that day, and blistered next day. After this he seemed better, and went coughing thro' the house that week. Sunday 13th, I first saw the child. The voice was rather more hoarse than usual in the croup; the pulse very quick, and the breathing very laborious, with a little pain in the throat in swallowing. Dry short cough. I suspected that there was a considerable mixture of the *angina* with the croup here. Leeches were applied to the neck, with fomentation and steams. 14th, Breathing much better, and all the symptoms easier. 15th, All the symptoms worse. Pulse and breathing very quick. Died the 16th.

THE *trachea*, when opened by Mr Wood surgeon, was covered, for half an inch from the *glottis* downwards, with a firm white thick membrane, from which, for an inch further down, was a soft yellowish purulent-like matter, not yet hardened. All the membranes of the *trachea* were entire under these, but much inflamed and red. In some parts

quick

of the lungs, the vesicles contained the same kind of matter, but in no great quantity.

C A S E VIII.

OCTOBER 20th, 1763. A girl, aged four years, coughed a little, was out the day following, and, at night, the cough increased with hoarseness. On the 22d, Mr *Wood*, the family-surgeon, by accident, saw her playing, and observing her breathing laborious, and her pulse quick, tho' she was otherwise well, he blooded her. 23d, She was worse, and had a blister applied to her throat and back, and got an injection. 24th, I saw her first; her breathing quick, and hoarse; pulse 180; urine with an ouzy sediment; and was told, that she had coughed up, what seemed to the family, pure matter. By her breathing, more of the same kind still seemed to be left behind. She eat and drank without any pain. To expel the matter, if possible, she got a vomit of squills; but nothing came away. 25th, She was much in the same way; and I observed some matter mixed with the *saliva*,
that

that she had coughed up. Breathing exceeding quick, and laborious. Ordered the steams of warm vinegar to be drawn into the lungs, on purpose to produce a fit of coughing; but it had no such effect, and she died in the evening.

WHEN the *trachea* was opened, by Mr Wood, the whole internal surface was covered with a membrane for three inches downwards from the *glottis*. This membrane was compleat all around, did not adhere to the *trachea*, and came off in the shape of a hollow tube. The natural coats of the *trachea* seemed entire, and not ulcered. The substance of the lungs was quite sound; but the vesicles of the left lobe were filled with yellow thick *pus*, which sunk in water. The new formed membrane had some degree of tenacity; and, when steeped in milk-warm water for two days, did not dissolve, but preserved some degree of cohesion. No fibres could be observed in it.

THE preceeding facts excited the curiosity of some gentlemen, and have been confirmed by

from similar observations made by them, and which they lately transmitted to my hands.

C A S E IX.

MR *Wardrobe* Surgeon related to me the the following case. A boy, eight years of age, and healthful, had been ill two days. His breathing was difficult; his voice was croupy; he was feverish, and had all the other symptoms of the disease. He was blooded, blistered, &c. but all to no purpose; and died the fourth day.

THE whole *trachea*, externally, appeared swelled, and rather oedematous than inflammatory. When he opened it, the whole inside was covered with a soft, thick, pale-coloured membrane, which easily separated from the parts below; those had a slight degree of inflammation. When he pursued the ramifications of the *trachea* thro' the lungs, there was found, there, a considerable quantity of real *pus*, which seemed to fill all those pipes. The lungs themselves were sound. Nothing can be liker the former cases than this;

this; and as Mr *Wardrobe* had no occasion of ever seeing it again, he had concluded, as I had done before, in similar circumstances, that it was an anomalous case. It now appears to be the common course of nature, in that disease, when mortal.

C A S E X.

THE following case, in confirmation of the preceeding, was communicated to me by Mr *Balfour* Surgeon, and which I shall deliver in his own words. *November 1st 1763,* I was desired to visit a child, between two and three years old, living at the *Canonmills*. His face was flushed; his breathing laborious; his cough of the hard croupy kind; his pulse was frequent; his tongue clean; with little drought, and no pain. I was informed by the parents, that the child had been very healthful; but for eight days past had been troubled with a cough, which did not put on the present appearance till the night before I was called; and that the child had, till that time, gone about, and eat his meat heartily. They had then applied leeches to
his

his neck, which bled a great deal, and had with difficulty been stop'd. I immediately took away, from the jugular vein, two cupfulls of blood more, which was fizy; and being informed, that he sometimes reached, I ordered a vomit of *tinct. ipecacuanh.* with an addition of *acet. scillit.* which was given about an hour after he was blooded, and brought up a great deal of tenacious *mucus*. That night, he got a blister to his back, and the saline mixture every two hours. Nov. 2d, His Pulse was as frequent, but not so firm. All the other symptoms rather worse. He was ordered a decoction of the bark; the oily saline mixture, to be taken internally; and the camphorated volatile oil, to be applied externally. The child took two or three doses of the decoction and mixture; but towards the evening, the symptoms growing worse, the medicines were discontinued. The child died next morning.

WHEN the *trachea* was laid open, I thought that a suppuration had happened; but, upon nearer inspection, found, that it was only the *mucus* which had acquired a purulent

rulent colour; and that it was formed into a membranous crust, which every where lined the internal membrane of the *trachea*, from the *larynx*, to its entrance into the *thorax*. This preternatural membrane appeared thickest about the middle of the *trachea*; and, there, seemed almost to fill up the passage. It was so firm, that a considerable portion separated, at once, leaving the natural membrane of the *trachea* bare and found, and with the appearance of a slight inflammation. I put a considerable portion of the preternatural membrane into water; and, after that, it still retained a degree of tenacity, but had too little firmness to be preserved.

C A S E X I.

Mr Wood Surgeon gave me the following. A child, about sixteen months old, was seized with the Croup, and died the seventh day. On opening the body, there was found in the lower part of the *larynx*, and beginning of the *trachea*, a substance of a membranous appearance, adhering slightly

ly around the inside of these parts. When it was removed, the membranes of the *trachea* were found entire, and somewhat redder than usual. Along the *trachea* and bronchial branches, there was a considerable quantity of *mucus*. It was frothy, and somewhat tenacious. This *mucus* extended as far as the membranous appearance, and downwards into the minutest branches of the *bronchiæ*, in which it had a yellowish purulent appearance. The surface of the lungs was somewhat reddish.

C A S E XII.

THE following case, which was communicated to me by —, I think worth relating; as it shows the disease in a different situation from all the preceeding; indeed, under such circumstances, as I never had an opportunity to see, and must appear very seldom in, for it is the only one of its kind that I have heard of.

Miss ***** , about nine years old, was seized with a slight cough, on the 25th of
October

October, owing to rainy weather, and wet feet. On the 26th, when I saw her first, she scarcely had any heat, thirst, or sickness, and no pain of any kind, except when she coughed, or was fretted, which bringing on a quick inspiration, she then felt some slight pain in the windpipe, a little below the *rima glottidis*. Her voice was shrill, like that of a young cock. She was blooded; got a gentle vomit; emolient cataplasms to her feet; and a blister to her back. 27th, Symptoms no better. No difficulty of deglutition, and no redness to be seen in the throat. She never expectorated any thing like *pus* or phlegm, during the whole course of the disease. Steams of warm water were tried. 28th, Her cough was incessant for some hours, during which, she coughed up a piece of a membrane. This I believed to be a part of what lines the *trachea*, as it had a mortified appearance, and was like black shagg silk. She died soon after this.

UPON opening the body, the disease seemed seated, solely, in the head of the *trachea*, as its membrane appeared to me mortified

two inches downwards. Below that, the *trachea*, and its branches, seemed quite sound.

It was very natural for one, who had never any opportunity of seeing this disease in its natural situation, to think, that a mortification had seized on the coats of the *trachea*. But to one who has been accustomed to inspect bodies, in this disease, it must appear probable, that it was only the preternatural and morbid membrane become black, which gave the *trachea* the appearance of being mortified. No wonder that the coats of the *trachea* were thought to be in a gangrenous state, when I imagined they had suppurated in the first case, that I met with. The coughing up a piece of the membrane, shows that it was this loosely adhering one, and none of the natural ones, which are so firmly attached; and which, having no fleshy parts below, could not have been so easily separated. This, then, appears to differ in no other point from the others, but only that here the morbid membrane had dried and

and turned black; whereas, in all the former, it was moist and white.

THESE are all the cases, that I have kept an account of, or received from others. Tho' few, they are leading ones, and sufficient to establish many material facts and circumstances, that have hitherto been unknown, with regard to this disease. We will now draw, from them, some conclusions; which, as we have proceeded so cautiously, will be the more certain. If we add any reasoning, to set these conclusions in a clearer light, we shall keep as close as possible to settled experiment; and shall give it only as probable conjecture, finding fault with no person who may reason differently.

COROLLARY I. It seems easy, in general, to distinguish the Croup from all other diseases hitherto described. A peculiar sharp shrill voice, not easily described; a remarkable freedom from all complaints, when in imminent danger, so that they will eat a minute before they expire; a quick laborious breathing; a frequent pulse, sometimes strong at first, but always soft and weak towards

wards the end; scarce any difficulty of deglutition, or remarkable inflammation in the *fauces*; a dull pain, often, and sometimes an external swelling in the upper part of the *trachea*; senses quite distinct to the last; and all the symptoms most rapid in their progress, characterise sufficiently this disease. I have not mentioned a cough, as that symptom is sometimes absent; and when it attends the Croup, it is not of the common kind, but more short and stifled, and less convulsive, with little or no expectoration.

THE other symptoms, that often attend it, such as a red swelled face, cedematous feet, drought, urine sometimes with, and, at other times, without a sediment, reachings, &c. are not so constant as the former; and therefore, are not so characteristical.

THOSE not conversant in this disease, often mistake peripneumoniacal complaints, and severe colds, for it; and, as they frequently cure these, they are apt to look on it as not so dangerous. But we have seen, that the lungs are totally free from any inflammation, and are not the seat of the disease.

The *Catarrhus suffocativus* of *Etmuller* seems, likewise, to have been a peripneumony. And, as he describes no peculiarity in the voice; as the symptoms seem to have been, apparently, feverer; and as it returned, at stated and regular periods, we must consider them as different diseases, tho' similar in many points.

As this disease has different vulgar names, for I am told, that on the west coast, they call it the *Chock*, or *Stuffing*, a technical one becomes absolutely necessary. A name is best given from the apparent symptoms, which are always conspicuous, while the cause is generally hidden, and often doubtful. The leading symptoms here, are, the shrill voice, and difficult breathing. It, therefore, may properly be called *Suffocatio stridula*.

COROL. II. As it appears peculiar to a certain age, and local, in a great measure, as to its situation, so it seems to attend certain seasons of the year. All the preceeding cases showed themselves during the course of the winter, from the month of *October* to the month of *March*, except one in *August*, which was probably owing to the antecedent small-

small-pox; for long catarrhs from the small-pox, measles, or chin-cough, are strong pre-disponent causes to this disease. The moist and cold weather in winter, seems to have great power in producing this disease.

COROL. III. Very different have been the opinions, with regard to the seat of the *Suffocatio stridula*. Some placing it in the *glottis* and its muscles; some in the coats of the *trachea*; while others have fixt its seat in the lungs themselves. None of all these opinions appear to be true. The *glottis* is never found contracted or inflamed; the lungs are quite sound; and the coats of the *trachea* seem to suffer only by second hand.

THE seat of this distemper appears to be the cavity of the wind-pipe. The place first, and most particularly, affected, is the upper part of the *trachea*, about an inch below the *glottis*; for in that part they complain of a dull pain; the external swelling has been observed there; and the morbid membrane we have found stretching from that place downwards. The back part of the *trachea*, where there are no cartilages, seems, from the in-
spection

The *Catarrhus suffocativus* of Etmuller seems, likewise, to have been a peripneumony. And, as he describes no peculiarity in the voice; as the symptoms seem to have been, apparently, feverer; and as it returned, at stated and regular periods, we must consider them as different diseases, tho' similar in many points.

As this disease has different vulgar names, for I am told, that on the west coast, they call it the *Chock*, or *Stuffing*, a technical one becomes absolutely necessary. A name is best given from the apparent symptoms, which are always conspicuous, while the cause is generally hidden, and often doubtful. The leading symptoms here, are, the shrill voice, and difficult breathing. It, therefore, may properly be called *Suffocatio stridula*.

COROL. II. As it appears peculiar to a certain age, and local, in a great measure, as to its situation, so it seems to attend certain seasons of the year. All the preceeding cases showed themselves during the course of the winter, from the month of *October* to the month of *March*, except one in *August*, which was probably owing to the antecedent small-

small-pox; for long catarrhs from the small pox, measles, or chin-cough, are strong predisponent causes to this disease. The moist and cold weather in winter, seems to have great power in producing this disease.

COROL. III. Very different have been the opinions, with regard to the seat of the *Suffocatio stridula*. Some placing it in the *glottis* and its muscles; some in the coats of the *trachea*; while others have fixt its seat in the lungs themselves. None of all these opinions appear to be true. The *glottis* is never found contracted or inflamed; the lungs are quite sound; and the coats of the *trachea* seem to suffer only by second hand.

THE seat of this distemper appears to be the cavity of the wind-pipe. The place first, and most particularly, affected, is the upper part of the *trachea*, about an inch below the *glottis*; for in that part they complain of a dull pain; the external swelling has been observed there; and the morbid membrane we have found stretching from that place downwards. The back part of the *trachea*, where there are no cartilages, seems, from the inspection

spection of those that die of this disease, to be its first and principal seat, as this morbid membrane is often found there, when it is in no other part.

No wonder that the morbid appearances are chiefly found there; for, there, are lodged the greatest number of glands, designed for the secretion of *mucus*. This fluid is separated from glandular bodies, deposited betwixt the different membranes, which are perforated by an infinite number of almost imperceptible small holes, that give a passage to the excretory ducts of these glands. The largest of these lye on the outer, and posterior surface of that membrane, which serves, on the back part, to make up the deficiency of the cartilages, as they are not compleat circles.

In some of the former cases, the whole glands, at the root of the tongue, and the *amygdalæ* were turgid, and the parts covered with *mucus*. In the mucous glands, in general, this distemper ought to be considered, as originally seated; but, from particular causes, more directed to those of the *trachea*; where,

where, from the nature of the part, it becomes visible in a different shape.

COROL. IV. Various have been the theoretical opinions of people, who never had the opportunity, or gave themselves the trouble, to search into the real cause of this distemper. Some have attributed it to spasms of the muscles, that contract the *glottis*. That it was not occasioned by spasms of the muscles, that contract the *larynx*, might have appeared from the symptoms themselves. Had this been of the class of spasmodic nervous diseases, it would have come in paroxysms, with remission and exacerbation; the urine would always have been pale; convulsions would have come on before death; and antispasmodics, instead of evacuants, would have been the remedies.

HAD these muscles, or any of the coats of the *trachea*, been inflamed or mortified, as others have thought, the pain would have been greater than it is, before the mortification; and the pulse would have been stronger, than it generally is, as the parts are membranous.

If, according to the opinion of many, the lungs had been inflamed and suppurated; the cough would have been more incessant and violent; the pulse full and soft; with a sensation of weight in the breast, fizy blood, dry tongue, and delirium.

BUT all these fanciful erroneous opinions fall to the ground, when we once inspect the morbid body. From that true source of knowledge, we learn, that the cause of this disease is a preternatural white, tough, thick membranous crust; covering, often for many inches, the inside of the *trachea*. This membrane is of so tenacious a consistence, that it can remain soaking in warm water, for many days, without dissolving. It is not attached to the parts below, but is easily separable from them, as there is always matter behind it. When it ends, the *trachea* is covered with good *pus*, or purulent *mucus*; as are, generally, the ramifications of the *bronchie* and vesicles, which, in some cases, were quite filled with it. To account how this matter, as there is no ulceration; and how this membrane are formed, we must trace things from their source.

THE

THE blood consists of three principal parts, the *crassamentum*, *serum*, and *lymph*; the last of which is a diaphanous liquor, full of gelatinous and nutritious particles. This liquor very similar to the white of an egg, is coagulable by heat, alkohol, acids, and by every method which attracts or evaporates the watery particles. This coagulable part, probably, is the nutritious part of our blood.

THIS gelatinous lymph abounds more in young animals, than in those come to maturity. *Geoffroy le Cadet*, in the *Mem. Acad. des Sciences*, for the year 1730, by many experiments shows us this fact; and makes it appear, that there is twice as much nutritive jelly in veal, as in beef. The final reason for this is self-evident; for young creatures, on account of their growing, require a greater supply of nourishment. Children must, therefore, abound more with it than men.

The *mucus* separated from glands, in different parts of the body, *viz.* nose, *fauces*, *oesophagus*, stomach, guts, *trachea*, and *bronchie*, appears to be very analogous to this lymph.

The

The former differs from the latter, only, in its greater spissitude; and this alteration is brought about after its secretion, the more watery parts being volatilized and dissipated, while the more heavy and viscous remain behind. This *mucus* is extremely disposed to inspissation, as appears from experiments. Even the admission of cold air into the *trachea* thickens this *mucus*, often, to such a degree, that it stagnates in the glands, and all secretion is entirely stop'd.

In children, as well as in old people, this secretion is plentiful, owing to the great quantity of it they contain, and to the laxity of their vessels. This evacuation is particularly increased during the cold and moist weather of winter, when the perspiration is diminished, and the glandular secretions increased.

This evacuation is promoted by all stimulants, operating on the *trachea* and lungs, as we observe from the effects of snuff, and the smoak of tobacco. The maritime air supplies a *stimulus*, calculated to increase the secretion from the *mucus* glands of the *trachea* and

and lungs. Along with the moisture, swept from the sea by the winds, is carried likewise, a great quantity of sea salt, as every thing, at some distance from the shore, tastes salt. This inspired into the lungs, stimulates the orifices of the tracheal glands, and increases the mucous secretion. This effect will happen more particularly in children, as their nerves are more irritable, than those of people advanced in years. Hence we find, that, in moist winter weather, particularly along the sea-shore, children should have an unusual secretion of *mucus*, from the glands of the wind-pipe. Diseases, such as the small-pox, measles, chin-cough, &c. and other natural causes, have the same effect in increasing this discharge. When these are combined, there exists the greatest predisposition to this disease.

When there happens a very great secretion of this coagulable fluid from the glands of the *trachea* in children, they are either not sufficiently attentive, or often too young, to spit it up. The thinner parts are carried off during expiration, while the remainder is

F
thickened

thickened and compressed, by the obstruction, that the narrowness of the *glottis* must make to the exit of the air from a larger canal. Every circumstance encourages its concretion into a solid firm membrane, while the more internal parts of the *mucus*, continuing still fluid, and the continual secretion of more, keep it separated from the parts below.

BUT how happens it that we find pure matter, which sinks in water, behind the membrane, and in the different ramifications of the *trachea*, when there is no ulceration? Matter does not seem to be formed, as was generally thought, by the vessels of the ulcer; but to exist in the blood, particularly in the serous and lymphatic liquors, nearly in the same state; and to be, probably, the true nutrititious, nay, perhaps, the coagulable part of our fluids. Dr *Pringle*, in his ingenious, useful, and accurate experiments, upon septic and antiseptic substances, found, that the *serum*, when stagnating, and exposed to heat, let fall a white substance like *pus*; and, from thence, justly, concludes, that the *pus* of ulcers is formed, in the same way, by the evaporation

tion

tion of the more watery particles, and the subiding and inspissation of this part. This fluid shows a great tendency to become solid, by restoring quickly all loss of substance.

THERE cannot be a fitter situation, for the formation of *pus* from the mucous secretion, than the *trachea* and lungs. There the same secretion, evaporation, stagnation, and heat exists, as in an ulcer; and, therefore, the same consequence should, and does, happen. We often see real *pus* spit up in the end of a cold. Perhaps this change from *mucus* to *pus*, happens before the membrane is formed, as *pus* shows such a tendency to assume a solid form, and is designed by Nature to repair all deficiencies in the solids.

THIS disease now appears of a very singular nature, and unlike any other that we know. DU HAEN has, indeed, lately told us, that he has sometimes found, in dissection, the *viscera* covered, externally, with a white tough crust. I wish he had given us the history of some of these patients. He imagines, that it was formed from the inflammatory crust in the blood; but, here, there never is found any.

I have lately met with a description in
 the Philosophical Transactions abridged, Vol.
 34, page 68th, of a membrane formed in the
 inside of the *trachea*. A boy five years
 old, died of a consumption. A year be-
 fore his death, he was troubled with a dry
 cough, which continued ever after, spitting,
 now and then, a little quantity of blood.
 Ten or twelve days before he died, his
 nurse took notice of some thick skins he
 spit up. His Physician, having exami-
 ned one of them, found, it had the shape
 and consistence of a vessel, which made
 him think it might perhaps be some ves-
 sel of the lungs. The child being dead,
 I opened the body. In the left side of
 the lungs, I found a little purulent *sanies*.
 The inside of the *trachea* was incrustated
 with a slimy membrane, which I took off
 from the *trachea*, and the branches in the
 lungs, infomuch that that *pellicula* made
 a perfect vessel, from the *larynx* to the ve-
 ry extremities of the *bronchie*, from which
 it came off very easily, without breaking ei-
 ther the trunk, or the branches. It adhered

" to the inward coat of the *trachea*, only by
 " some small filaments, which were so ten-
 " der, that they broke off easily; and made
 " me think, the production of that extraor-
 " dinary vessel was nothing but the mucila-
 " ginous humour, continually discharged
 " by the glands of the *trachea*, grown more
 " clammy by the distemper, and so dry that
 " it could not be spit out; this obstructing
 " the inside of the *trachea* and *bronchie*, and
 " growing thicker, was at last shaven off by
 " the violent fit of coughing the child was
 " sometimes taken with, and then was re-
 " newed again by the succeeding *mucus*. This
 " new vessel would not dissolve in hot water.
 " The vessels of the lungs, that is the *tra-*
 " *chea* and *bronchie*, the pulmonary arteries
 " and veins, were as whole as could be."

It appears, by the dissection, that there
 was no imposthume formed in the lungs; and
 that the child died from this preternatural
 membrane. Perhaps, many of the *polypus's*,
 thrown up from the bronchial vessels of grown
 up people, might have the same origin.

These

These cases show, how apt the *mucos* is to acquire a solid form.

We have an account, in the Philosophical Transactions abridged, vol. 2d, of a disease in Cornwall, called the *morbay strangulatorius*, which, from the pustles, *petechie*, and putrid disposition of the fluids, appears more nearly allied to the malignant sore throat, altho' it sometimes attacked the *aspera arteria*. A case is, there, related, where a hollow membranous coat, of the shape of the *trachea* and its branches, was coughed up, and supposed to be the natural membrane of these parts. Another similar to the former came up afterwards. The patient lived about a day after this.

COROL. V. There appears, from the preceding facts, two very different situations of the *Suffocatio stridula*; the former more inflammatory, and less dangerous; the latter less inflammatory, and highly dangerous. In the former, the pulse is generally strong; the face red; drought great; and they agree with evacuations: In the latter, the pulse is very quick, and soft; great weakness; tongue moist;

moist; less drought; great anxiety; and evacuations hasten death. The former may be called the inflammatory; and the latter, the purulent state.

THESE are two very different stages of the distemper, and must be carefully distinguished by the practitioner, that he may know how to direct his applications; or, at least, how to form a just *prognosis*; as he is, generally, not called till the patient is in the latter stage. If this disease comes on with an old habitual cough, or by slow degrees, the inflammatory stage will scarcely be perceivable.

If the pulse is very soft and feeble, especially after being strong; or any purulent matter comes up with spitting, vomiting, or coughing, which happened in some of the former cases, we have a proof that the purulent state is, already, formed. Experience has taught me another mark, by which I can distinguish these different states. I have observed, that the urine, which, during the inflammatory state, is thin, had always, after the purulent state came on, a

light

light, oily, purulent sediment, such as people have from matter collected any where, that has no vent outwards.

No wonder, that the matter is speedily absorbed, in this situation, as it is contained in the *branchiæ* and vesicles, and of course imbibed by the whole internal surface of the lungs and *trachea*; a surface infinitely greater than any imposthume can have. Hence the blood will be suddenly filled with it, and the urine have that white purulent sediment, which arises from absorption of matter.

In the latter stage, we find the membrane compleatly formed. Is it so in the former? I suspect that it has not yet got a firm consistency; otherwise evacuations would not have so sudden and salutary an effect, as they produce in this stage. Perhaps, the turgid and inflamed glands are but yet expelling the thick *mucus*, which is circulating thro' the vessels in too great a quantity, and in too inspissated a state. This is strongly confirmed by the great quantity of *mucus*, found in the stomach, and the swelling of the mucous glands at the root of the tongue. Even af-

ter death we perceive some degree of inflammation in the coats of the *trachea*, which probably has been greater at the beginning, when the flux of humour commenced, and the irritation was stronger.

COROL. VI. It seems to be no very difficult matter to account, from the cause, for all the symptoms of this disease. A straitening of the *trachea*, and dryness of the parts, will mechanically alter the voice, and make it more shrill; for we find in all wind-instruments, the notes are acute in proportion to the smallness of the bore. Mr. Balfour surgeon told me, that he attended a child in a disease, which, from the similarity of voice, appeared to him the Croup. The child died. When opened, a piece of shell, which the child had sucked in with it's breath, was lying across the *trachea*, about an inch below the *glottis*, and the membrane was inflamed and dry. Here was an artificial Croup raised, from which we may evidently perceive, how the voice is altered in the natural disease.

WHEN

WHEN there appears to be a great quantity of *mucus* circulating in the vessels; when there is, often, so much *mucus* or *pus* in all the pipes of the lungs; when there is a preternatural membrane formed in the *trachea*; no wonder that Nature excites a fever, her general and constant resource, when she is violently attacked and in danger.

CONSIDERING the acuteness of the fever; considering the obstruction in the *trachea*, *bronchie*, and vesicles; with what difficulty the air must gain admission to distend them; and what hindrance that must give the blood circulating through the lungs; a laborious breathing must, necessarily, attend the other symptoms.

As the blood passes with some difficulty thro' the lungs, an unusual weakness must certainly come on, the face become swelled, and the extremities appear cedematous.

To account for that total want of pain, or so slight a one that they don't attend to it, unless when asked, is a matter of some difficulty. That the membrane of the wind-pipe, in general so very irritable from every
 slight

slight cause, should calmly bear the presence of such a quantity of matter, and of so thick a membrane, is not the least surprizing circumstance of this uncommon distemper. The *mucus* being a humour natural to these parts; its slow and gradual collection and inspissation; fresh *mucus* constantly separated, which hinder the membrane from hurting the *trachea*, unless in motions of the neck; these reasons may account, in part, for the diminution of that natural irritability, which resides in these places. But they do not satisfy me altogether. We cannot expect to have all our doubts removed.

COROL. VII. This disease appears, in general, to be a very dangerous one, and the more so, as it is silent in its progress, and gives no visible alarm, till death is near at hand. The first stage of this distemper, often, passes unobserved; and, before we see it, is beyond all remedy. As it happens, frequently, to young children, who are unable to speak or describe their feelings, we have double reason to be afraid.

If

If we be not called till the third or fourth day; if the breathing appears much affected, the pulse quick and weak, the face red, great anxiety, and frequent tossing, the danger is great and pressing. But if we see the patient the first or second day of the attack; if the breathing is not very bad; the pulse, though frequent, strong, and firm; and more especially, if the voice is only altered, in its stronger exertions of crying or coughing, but more natural in its common state, we may entertain hopes of a recovery. The first sign commonly of safety, is the cough becoming stronger and less dry, with that peculiar sound which attends moistened lungs; for this shows that the membrane is not formed, or is already dissolved, and that the inflammatory state is abated.

THE case seems very desperate, when the membrane is once formed, and the lungs filled with matter. In the latter case, the patient is soon suffocated, as effectually, though more slowly, as if he was immersed over the head in it.

It

It appears, from the preceding cases, that the membrane, alone, is sufficient to kill, as there was but little matter found in the lungs of some of them. **DESPERATE** as the case is, the patient's recovery is, perhaps, not altogether impossible. Nature, by the means of a critical cough, may eject the membrane and matter; though, indeed, the sensation of those parts, by which it must effectuate this, seems to be most altogether destroyed. If that happened, the patient would recover, as the lungs are quite sound.

In one of the former cases, part of the membrane was thrown up, but the patient died. I was told by Mr Gibson surgeon, that a patient of his escaped, after throwing up a great quantity of matter, and coughing up large pieces of a membrane.

THE following curious case was communicated to me, lately, by Mr Rae surgeon. A boy betwixt five and six years of age, was seized, August 5th, 1764, with a night cold and hoarseness. On the 8th, had a difficulty of breathing, the shrill voice, and a

little fever. As the boy was in a natural sweat, he ordered a mixture with *Spt. Minder.* 9th, Pulse quicker, and no expectoration. Was blooded, got an injection, and had a blister applied to his throat. 11th, This morning he was told, that, after a severe fit of coughing, a membrane-like substance, about two inches long, pretty tough, and resembling a piece of thin white leather, had been thrown out. In the evening, some *pus* was observable in the phlegm expectorated up, and easily distinguishable from it. The boy did not recover his voice for three months.

ART., though not in the way of internal medicine, may attempt effectuating the same end.

COROL. VIII. We have had occasion to see, in the preceeding cases, great variety of different applications, and their good or bad success. Let us deduce some general rules with regard to practice. In the inflammatory state, bleeding appears to have been attended with immediate good effects, and to be a powerful remedy in this situation. This ought to be done expeditiously and plentifully, while the pulse will allow it. It is

is best to take blood, at first, with the lancet, so that a sufficient quantity may soon be drawn off; and, afterwards, by leeches, applied to the upper and fore part of the throat. Their orifices, when kept open by the application of warm wet-cloths, will allow the blood to ouze from them for many hours.

It seems necessary to keep the patient's belly constantly loose, by such medicines as children will take; for we ought to be very attentive not to set them a-crying, as that may suddenly suffocate the child. For this purpose, I generally use tablets of *magnesia alba*, made palatable with sugar. Some of the cooling resolvent salts, such as the crystalised *sal polychrest*, dissolved in whey, will be of service, provided the patient will peaceably take them.

BLISTERS, applied round the neck, after the vessels are well emptied, do great service. They seem to do none, when applied before this time; nay, if the state is very inflammatory, must do much hurt, from their violent *stimulus* on the vessels. Emollient fomentations and cataplasms, applied

phed around the neck, are of considerable use, and keep up a local evacuation.

The real evacuations operate in several different ways, viz. by thinning the dense *mucus* still yet circulating in the blood; by diverting its flux from the parts affected, as there is a great communication and consent betwixt the different *mucous* glands thro' the body; but, particularly, by increasing the absorbent power of the vessels on emptying them; by which means the purulent matter will be sucked in from the lungs. It was found in the urine of one of the foregoing convalescent patients.

The resolvent and gently stimulating steams of warm water and vinegar, drawn in with the breath, seemed always to have an immediate good effect. Is it from dissolving the thick *mucus*, and so opposing its concretion? That is probably the case, as the patient always spits a great deal after it, and the lungs appear moister.

VOMITS are, frequently, given in this stage of the disease. They are, generally, thought to be of use; but I never saw any advantage

advantage arising from them. I rather suspect that they must be often pernicious, as they increase the secretion of *mucus* in the lungs, without expelling it, which is the very circumstance that, if possible, we ought to guard against. The evacuation that they make otherways is but small.

GENTLE sudorifics may be of service, as they divert the flux from the more internal parts to the external. Others think that these are of use, and prescribe the *Vin. emet.* in small quantities. I cannot say that I ever saw any great advantage from them.

BUT when the membrane is once formed, or the purulent matter, in great quantity, collected in the lungs, evacuations can be no longer of any use; they rather hurt, as the pulse is then weak. Hence the reason, why people differ about the effects of evacuations in this disease, some deeming them the only certain remedy, while others hold them to be destructive. Both have built their opinion on facts and observation. But as their applications were made in different stages of the distemper, the effects behaved

to be different. What was the only remedy in the inflammatory state, must appear hurtful in the purulent.

In this state of purulency we plainly see, that nothing can do service, but what brings up the matter from the lungs, and that speedily too. And pray what medicines can do this? Vomits only evacuate, immediately, the stomach; but, by means of the sympathy of the nerves, they often bring on a coughing, during their action. They might be of service, if they had this salutary effect; but I never saw them answer this purpose, though often given with that design. The nerves are, indeed, so inactive, that we can entertain no reasonable hopes from this quarter.

SHALL we endeavour to excite a cough, by the means of effluvia, or steams inspired into the lungs? That has been tried, to no purpose; for the membrane which covers the trachea, and the mucus or matter which covers the lungs, render these parts insensible to any external irritation.

To effectuate a solution of the membrane, after it is once completely formed and consolidated, seems to me impossible by any internal or external medicine that I know. To effectuate its expulsion appears equally impossible. We have, then, no method remaining to save the patient's life, but that of extraction. That cannot be done thro' the glottis. When the case is desperate, may we not try *tracheotomy*? I can see no weighty objection to that operation, as the membrane can be so easily got at, and is very loose. Many a more hazardous operation is daily performed. I would propose, however, that it should be first tried on a dead subject, that we may proceed with all manner of caution and assistance. But something ought to be tried in this dangerous situation.

We have now brought our Inquiry to a conclusion. The facts, we hope, will appear curious, exact, and sufficiently numerous for our purpose; the method such as is used in mathematics and natural philosophy, for discovering unknown truths; and

the conclusions new, surprising, and naturally arising from the facts. If we have not brought this Inquiry to that degree of perfection, in every point, that we could have wished, we have the satisfaction, at least, to think, that, so far as we go, our discoveries are certain, as they are built on the foundation of Nature. Shunning, with all imaginable care, fruitless and deceitful speculations, however entertaining, we have constantly kept our facts and experiments in view, as the only road to the improvement of medicine, and the good of mankind.

F I N I S.



We have now brought this Inquiry to a conclusion, and hope, with some few curious facts, to have furnished such as are used in mathematics and natural philosophy, for discovering unknown truths; and the

